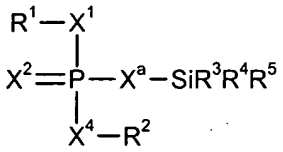
IN THE CLAIMS

1. (currently amended): An oligonucleotide comprising at least one pentavalent internucleotide phosphorus atom protected with a group of formula $-X^aSiR^3R^4R^5$ wherein X^a represents O or S, and R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more.

2. (original): An oligonucleotide according to claim 1, wherein the group of formula $-X^aSiR^3R^4R^5$ is a tert-butyldimethylsilyloxy group.

3. (original): An oligonucleotide according to either of claims 1 and 2, wherein a single group of formula $-X^aSiR^3R^4R^5$ is located at the terminal internucleotide linkage.

4. (currently amended): An oligonucleotide according to claim 1, having the Formula (1):



Formula (1)

wherein:

R^1 and R^2 independently are nucleoside, nucleotide or oligonucleotide moieties;

R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;

X^a represents O or S~~, preferably O~~;

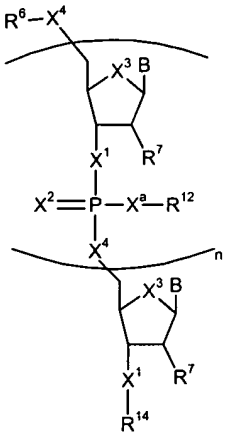
X^1 and X^4 are each independently -O-, $-CH_2-$, -S- or NR^n, where R^n represents H or C_{1-4} alkyl~~, preferably both of X^4 and X^4 being O~~; and

X^2 is O or S~~, preferably S~~.

5. (original): An oligonucleotide according to claim 4, wherein X^1, X^a and X^4 are each O, and one of R^3, R^4 and R^5 represents a tert-butyl group, with the others representing methyl groups.

6. (original): An oligonucleotide according to either claims 4 and 5, wherein R^1 is a nucleotide substituted at the 3'-position by X^1, and R^2 represents an oligonucleotide substituted at the 5'-position by X^4.

7. (currently amended): An oligonucleotide according to claim 4, of Formula (2):



Formula (2)

wherein:

X^a for each occurrence is independently -O- or S-;

X^1 and X^4 are, independently, -O-, $-CH_2-$, -S- or NR^n, where R^n represents H or C_{1-4} alkyl;

X^2 for each occurrence is O or S;

X^3 for each occurrence is, independently, -O-, -S-, $-CH_2-$, or $-(CH_2)_2-$;

R^6 is H, an alcohol protecting group, an amino protecting group or a thio protecting group;

R^7 for each occurrence is, independently, -H, -F $-OR^8$, $-NR^9R^{10}$, $-SR^{11}$, or a substituted or unsubstituted aliphatic group~~, such as methyl or allyl~~;

R^8 for each occurrence is, independently, -H, a substituted or unsubstituted aliphatic group ~~(e.g., methyl, ethyl, methoxyethyl or allyl)~~, a substituted or unsubstituted aryl

group, a substituted or unsubstituted aralkyl group, an alcohol protecting group, or -$(CH_2)_q$-NR^xR^y;

R^9 and R^{10} for each occurrence are each, independently, -H, a substituted or unsubstituted aliphatic group, or an amine protecting group, or R^9 and R^{10} taken together with the nitrogen to which they are attached are a heterocyclyl group;

R^{11} for each occurrence is, independently, -H, a substituted or unsubstituted aliphatic group, or a thio protecting group;

R^{12} for each occurrence is, independently, a phosphorus protecting group, provided that at least one R^{12} represents a group of formula -$SiR^3R^4R^5$, in which R^3, R^4 and R^5 are ~~as previously defined~~ each independently optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;

R^{13} is for each occurrence is, independently, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group;

R^{14} is H a hydroxy protecting group, a thio protecting group, an amino protecting group, -$(CH_2)_q$-NR^xR^y, a solid support, or a cleavable linker attached to a solid support;

R^x and R^y are each, independently, -H, a substituted or unsubstituted aryl group, a substituted or unsubstituted heteroaryl group, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted heteroaralkyl group or an amine protecting group, or, R^x and R^y taken together with the nitrogen to which they are attached form a heterocyclyl group;

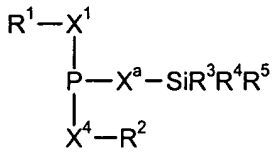
q is an integer from 1 to about 6;

B is -H, a natural or unnatural nucleobase, or a protected natural or unnatural nucleobase; and

n is a positive integer.

8. (original): An oligonucleotide according to claim 7, wherein each X^1, X^3 and X^4 are O; R^6 is H or an alcohol protecting group; R^7 is H, F, OCH_3, $OCH_2CH_2OCH_3$ or O-protecting group; R^{12} is -CH_2CH_2CN or tert-butyldimethylsilyl, provided at least one R^{12} is tert-butyldimethylsilyl; R^{14} is H or a cleavable linker attached to a solid support, and n is from 8 to 40.

9. (original): A process for the preparation of a compound of Formula (1) as defined in claim 4, which comprises oxidising or sulfurising a compound of Formula (3):



Formula (3)

wherein R^1, R^2, R^3, R^4, R^5, X^a, X^1 and X^4 are as defined in claim 4.

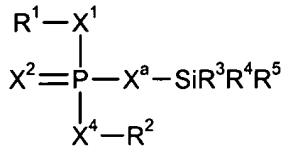
10. (canceled)

11. (currently amended): A compound of Formula (4):

$$R^1\text{-}X^1\text{-}P(NR^{17}R^{18})\text{-}X^a\text{-}SiR^3R^4R^5$$

wherein ~~R^1, R^3, R^4, R^5, X^a and X^1 are as defined in claim 4,~~
R^1 is a nucleoside, nucleotide or oligonucleotide moiety;
R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;
X^a represents O or S;
X^1 is –O-, $-CH_2-$, -S- or NR^n, where R^n represents H or C_{1-4} alkyl; and
R^{17} and R^{18} are each, independently, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl or R^{17} and R^{18} taken together with the nitrogen to which they are bound form a heterocyclyl group.

12. (currently amended): A process for the preparation of a compound of Formula (1) ~~as defined in claim 4~~



Formula (1)

which comprises:

a) coupling a compound of Formula (4) ~~as defined in claim 11,~~

R^1-X^1-P($NR^{17}R^{18}$)-X^a-$SiR^3R^4R^5$

with a compound of formula R^2-X^4-H ~~wherein R^2 and X^4 are as defined in claim 4~~, in the presence of an activator; and b) oxidising or sulfurising the product of step a) wherein

R^1 and R^2 independently are nucleoside, nucleotide or oligonucleotide moieties;

R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;

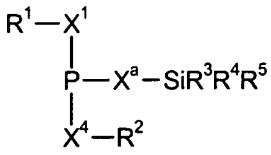
X^a represents O or S;

X^1 and X^4 are each independently -O-, -CH_2-, -S- or NR^n, where R^n represents H or C_{1-4} alkyl;

X^2 is O or S; and

R^{17} and R^{18} are each, independently, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl or R^{17} and R^{18} taken together with the nitrogen to which they are bound form a heterocyclyl group.

13. (currently amended): A process for the preparation of a compound of Formula (3) ~~as defined in claim 10~~



Formula (3)

which comprises coupling a compound of Formula (4) ~~as defined in claim 11~~,

R^1-X^1-P($NR^{17}R^{18}$)-X^a-$SiR^3R^4R^5$

with a compound of formula R^2-X^4-H ~~wherein R^2 and X^4 are as defined in claim 4~~, in the presence of an activator

wherein

R^1 and R^2 independently are nucleoside, nucleotide or oligonucleotide moieties;

R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;

X^a represents O or S;

X^1 and X^4 are each independently -O-, -CH_2-, -S- or NR^n, where R^n represents H or C_{1-4} alkyl; and

R^{17} and R^{18} are each, independently, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl or R^{17} and R^{18} taken together with the nitrogen to which they are bound form a heterocyclyl group.

14. (currently amended): A process for the preparation of a compound of Formula (4) ~~as defined in claim 11,~~

$$R^1\text{-}X^1\text{-}P(NR^{17}R^{18})\text{-}X^aSiR^3R^4R^5$$

which comprises reacting a compound of formula R^1-X^1-H, ~~wherein R^1 and X^1 are as defined in claim 4~~ with a compound of formula $R^3R^4R^5Si$-X^a-$P(NR^{17}R^{18})_2$ wherein ~~X^a, R^3, R^4, R^5, R^{17} and R^{18} are as defined in claim 5~~

R^1 is a nucleoside, nucleotide or oligonucleotide moiety;

R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;

X^a represents O or S;

X^1 is -O-, $-CH_2-$, -S- or NR^n, where R^n represents H or C_{1-4} alkyl; and

R^{17} and R^{18} are each, independently, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl or R^{17} and R^{18} taken together with the nitrogen to which they are bound form a heterocyclyl group.

15. (currently amended): A process for the preparation of a compound of Formula (4)

$$R^1\text{-}X^1\text{-}P(NR^{17}R^{18})\text{-}X^aSiR^3R^4R^5$$

wherein X^a is O which comprises a) reacting a compound of formula R^1-X^1-H, ~~wherein R^1 and X^1 are as defined in claim 4 and~~ with a compound of formula Z-$P(NR^{17}R^{18})_2$ ~~wherein R^{17} and R^{18} are as defined in claim 11 and Z represents a leaving group, preferably a chlorine atom,~~ to form a compound of formula R^1-X^1-$P(NR^{17}R^{18})_2$; b) hydrolysing the compound of formula R^1-X^1-$P(NR^{17}R^{18})_2$ to form a compound of formula R^1-X^1-$PH(=O)(NR^{17}R^{18})$, ~~the hydrolysis preferably taking place in the presence of a weak acid, such as tetrazole, S-ethyltetrazole, or an imidazole salt;~~ and c) reacting the compound of formula R^1-X^1-$PH(=O)(NR^{17}R^{18})$ with a

silylating agent of formula Y^1-$SiR^3R^4R^5$ wherein Y^1 is a leaving group, to form the compound of Formula (4)

wherein

R^1 is a nucleoside, nucleotide or oligonucleotide moiety;

R^3, R^4 and R^5 each independently are optionally substituted hydrocarbyl groups, selected such that that total number of carbon atoms in R^3 plus R^4 plus R^5 is 4 or more;

X^1 and X^4 are each independently -O-, -CH_2-, -S- or NR^n, where R^n represents H or C_{1-4} alkyl;

R^{17} and R^{18} are each, independently, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl or R^{17} and R^{18} taken together with the nitrogen to which they are bound form a heterocyclyl group;

Y^1 and Z each independently represent a leaving group.

16. (canceled)

17. (canceled)

18. (canceled)

19. (canceled)

20. (canceled)

21. (canceled)

22. (canceled)

23. (canceled)

24. (new): An oligonucleotide according to claim 4 wherein X^1, X^a and X^4 are each O and X^2 is S.